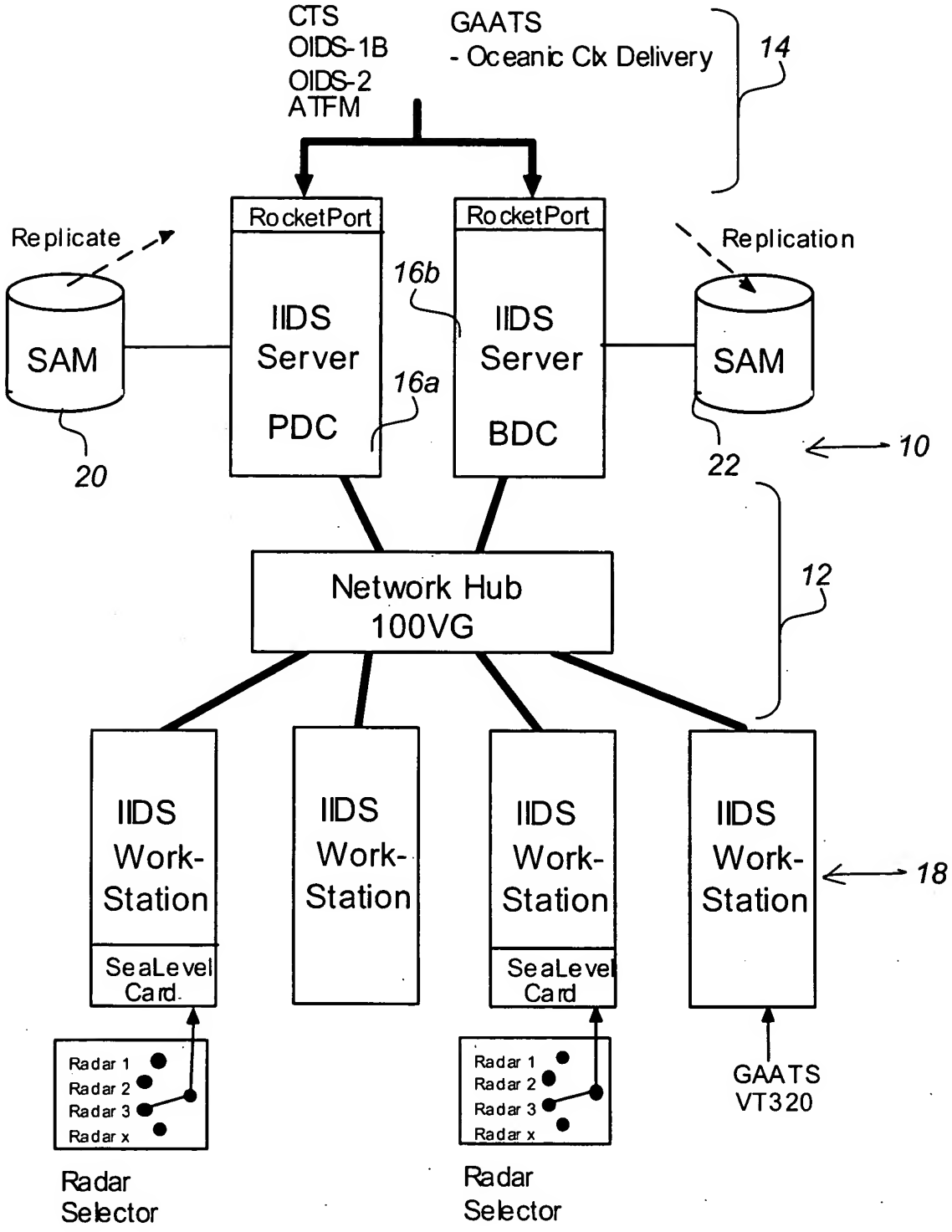

CTS
OIDS-1B
OIDS-2
ATFM
GAATS
- Oceanic Clx Delivery
14
RocketPort
RocketPort
Replicate
Replication
16b
IIDS
Server
PDC
IIDS
Server
BDC
SAM
SAM
16a
20
22
10
Network Hub
100VG
12
IIDS
Work-
Station
SeaLevel
Card
IIDS
Work-
Station
IIDS
Work-
Station
SeaLevel
Card
IIDS
Work-
Station
18
Radar 1
Radar 2
Radar 3
Radar x
Radar 1
Radar 2
Radar 3
Radar x
GAATS
VT320
Radar
Selector
Radar
Selector

Fig. 1

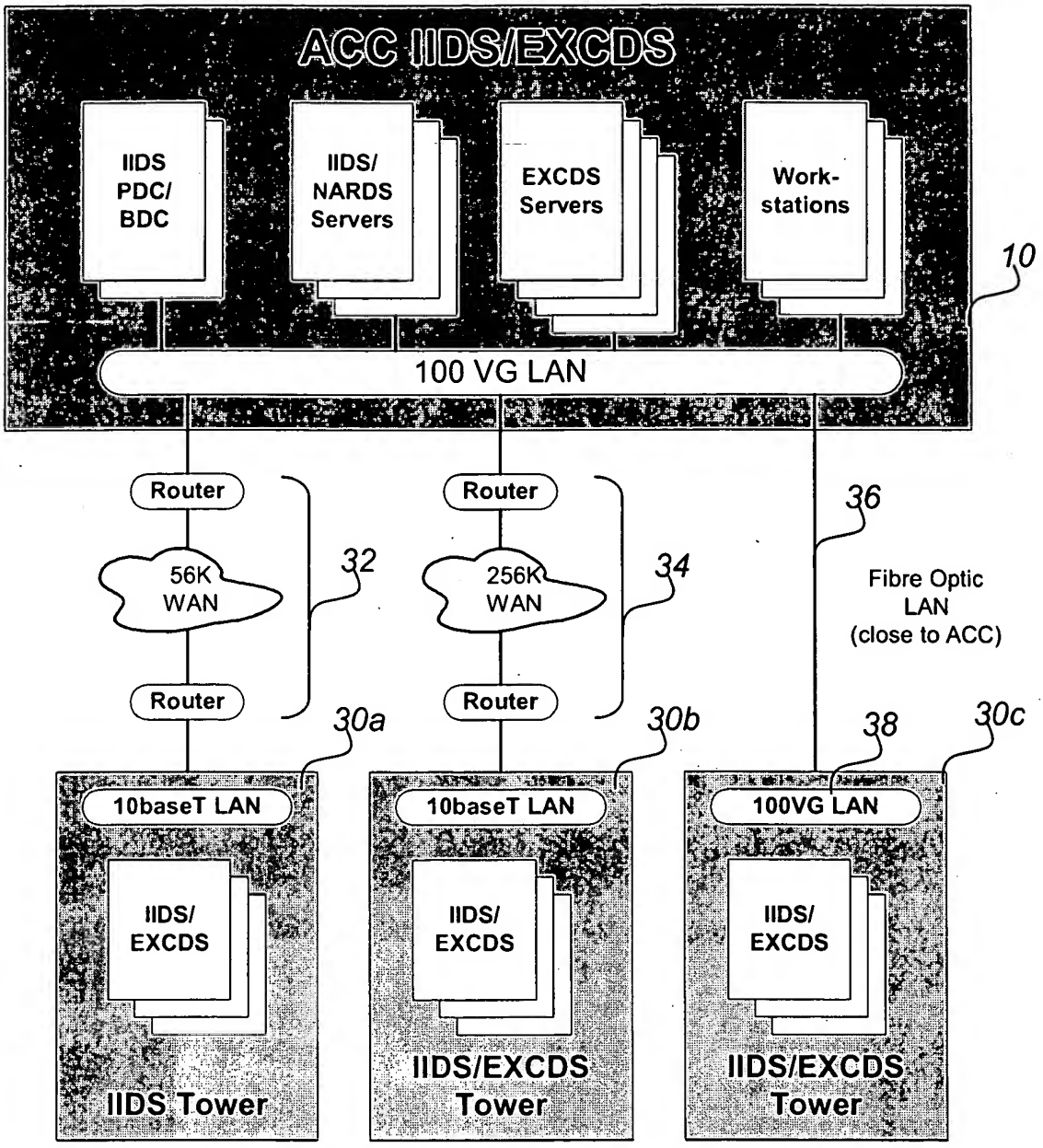

ACC IIDS/EXCDS
IIDS PDC/ BDC
IIDS/ NARDS Servers
EXCDS Servers
Work-stations
10
100 VG LAN
Router
Router
36
56K WAN
32
256K WAN
34
Fibre Optic LAN (close to ACC)
Router
Router
30a
30b
38
30c
10baseT LAN
10baseT LAN
100VG LAN
IIDS/ EXCDS
IIDS/ EXCDS
IIDS/ EXCDS
IIDS Tower
IIDS/EXCDS Tower
IIDS/EXCDS Tower

Fig. 2

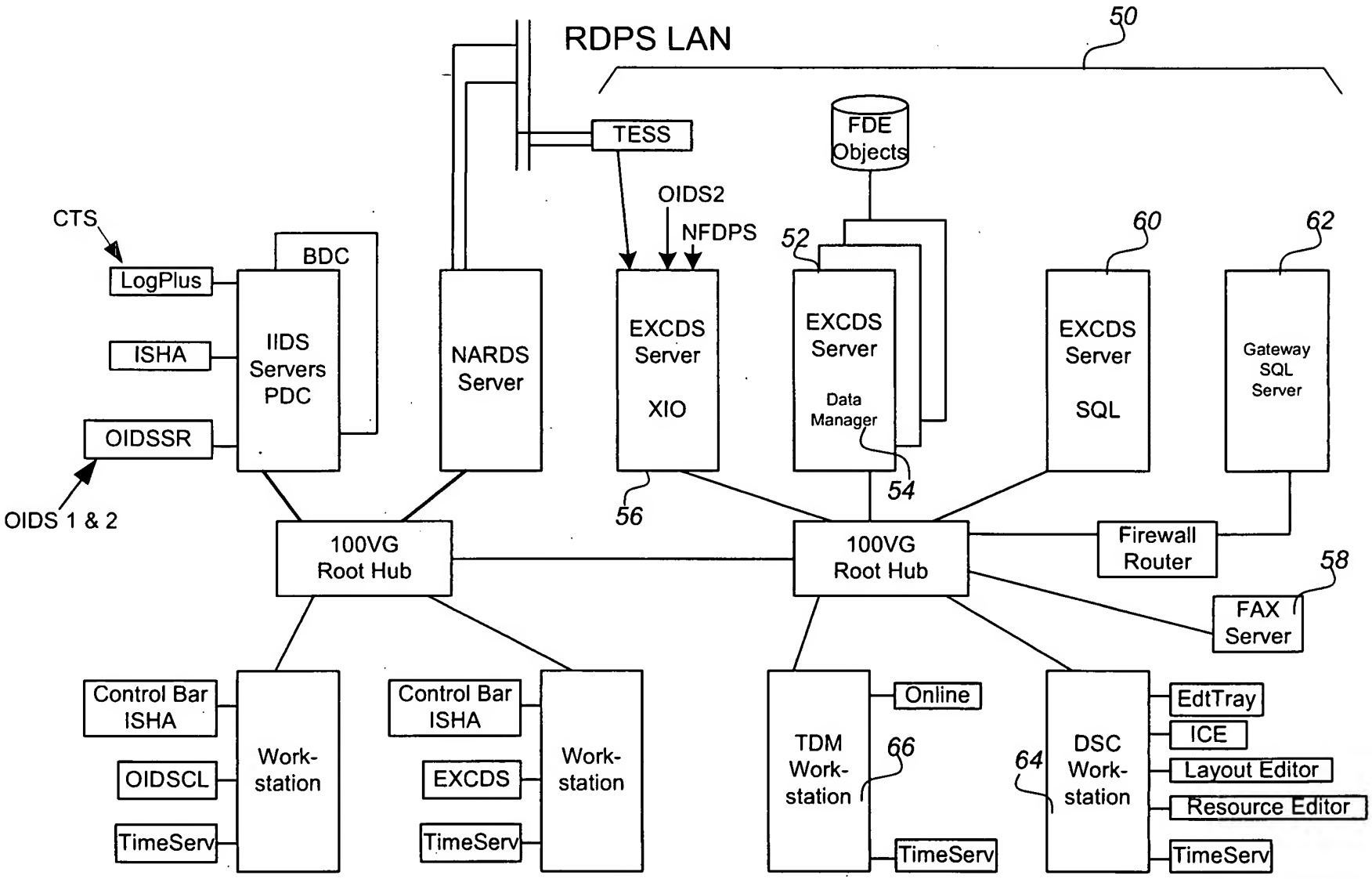

RDPS LAN
50
TESS
FDE Objects
OIDS2
NFDPS
CTS
BDC
LogPlus
ISHA
OIDSSR
IIDS Servers PDC
NARDS Server
EXCDS Server XIO
52
EXCDS Server Data Manager
60
EXCDS Server SQL
62
Gateway SQL Server
OIDS 1 & 2
56
54
100VG Root Hub
100VG Root Hub
Firewall Router
58
FAX Server
Control Bar ISHA
OIDSCL
TimeServ
Work-station
Control Bar ISHA
EXCDS
TimeServ
Work-station
TDM Work-station
66
Online
TimeServ
64
DSC Work-station
EdtTray
ICE
Layout Editor
Resource Editor
TimeServ

Fig. 3

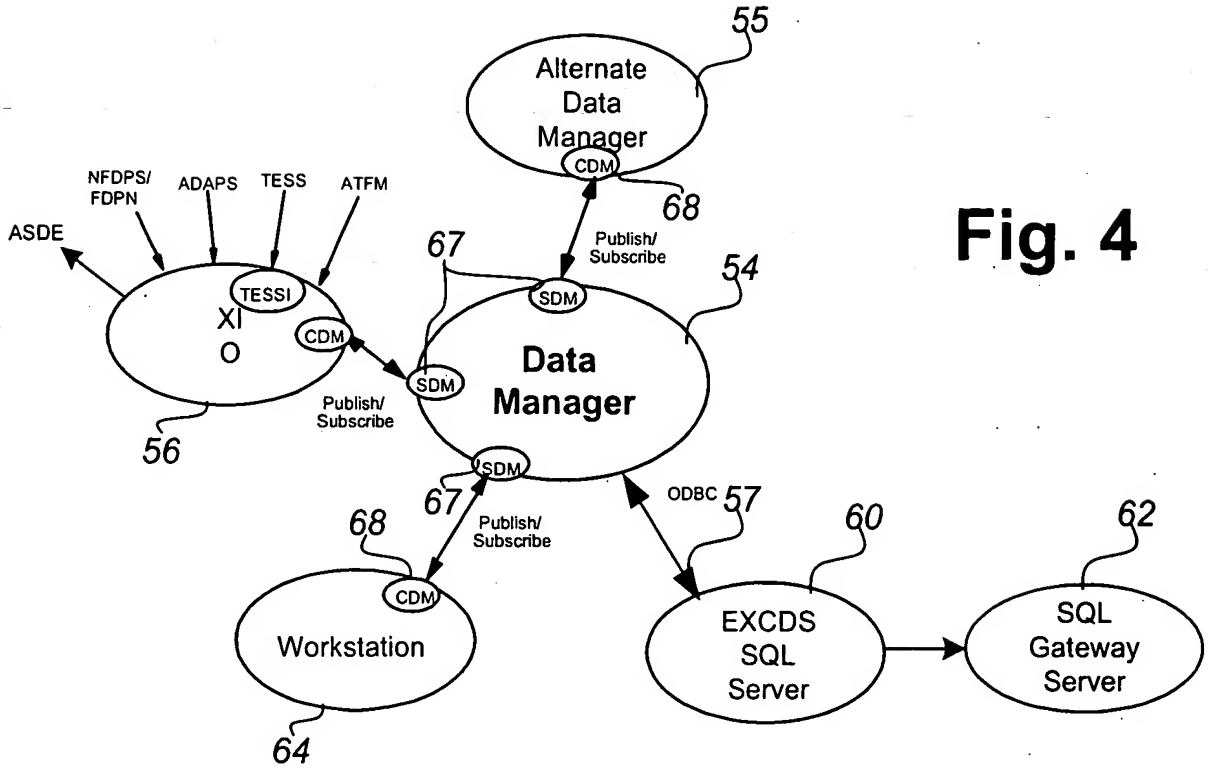

55
Alternate Data Manager
CDM
68
NFDPS/ FDPN
ADAPS
TESS
ATFM
ASDE
67
Publish/ Subscribe
54
SDM
TESSI
XI O
CDM
SDM
Data Manager
Publish/ Subscribe
56
SDM
67
Publish/ Subscribe
ODBC
57
60
62
68
CDM
Workstation
EXCDS SQL Server
SQL Gateway Server
64

Fig. 4

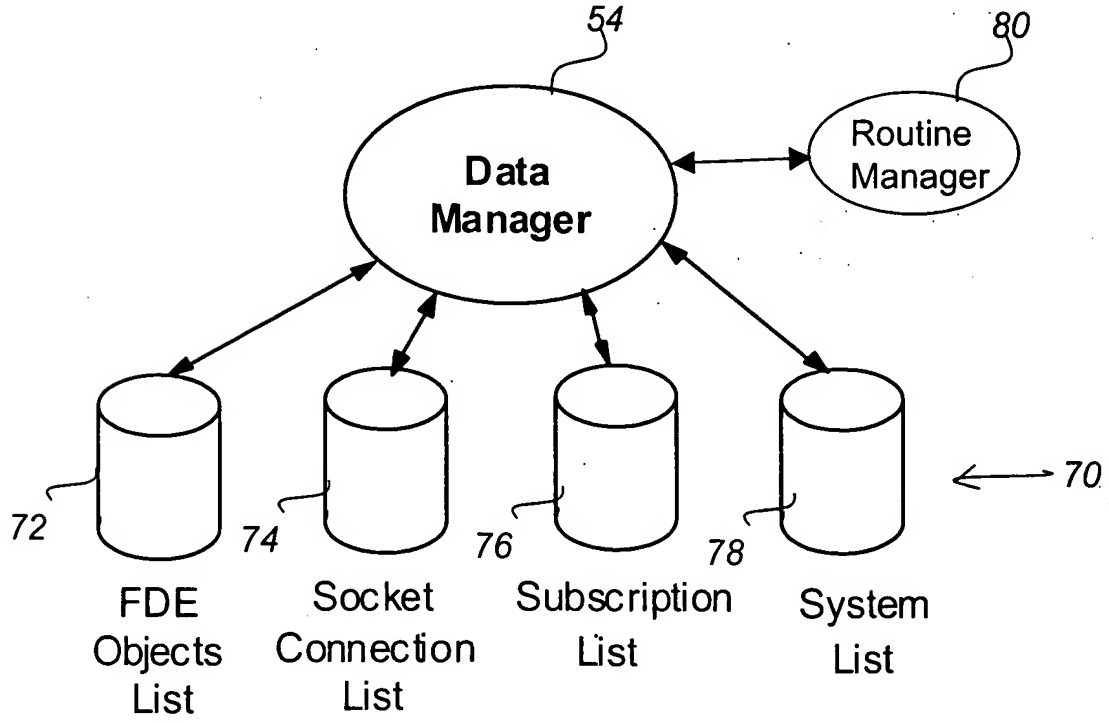

54
80
Data Manager
Routine Manager
70
72
74
76
78
FDE Objects List
Socket Connection List
Subscription List
System List

Fig. 5

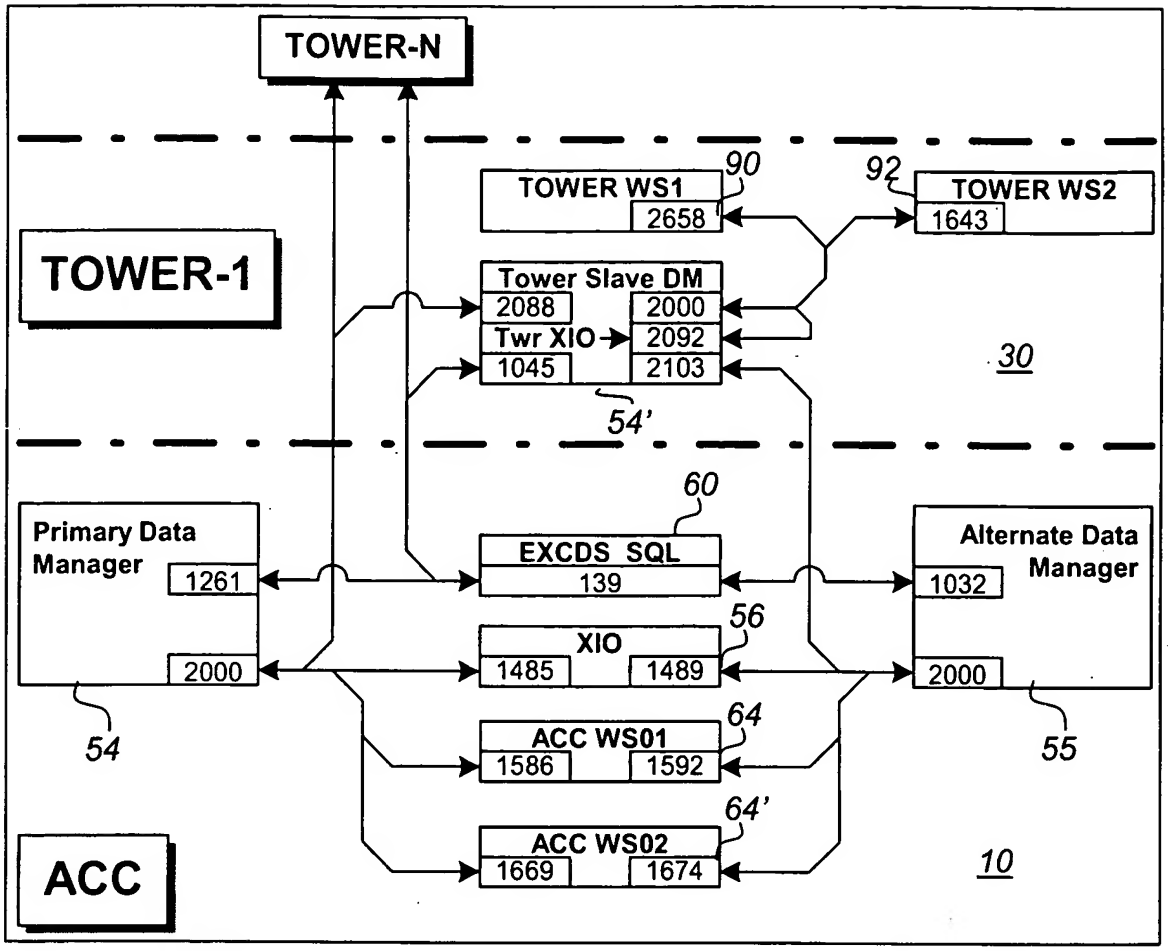
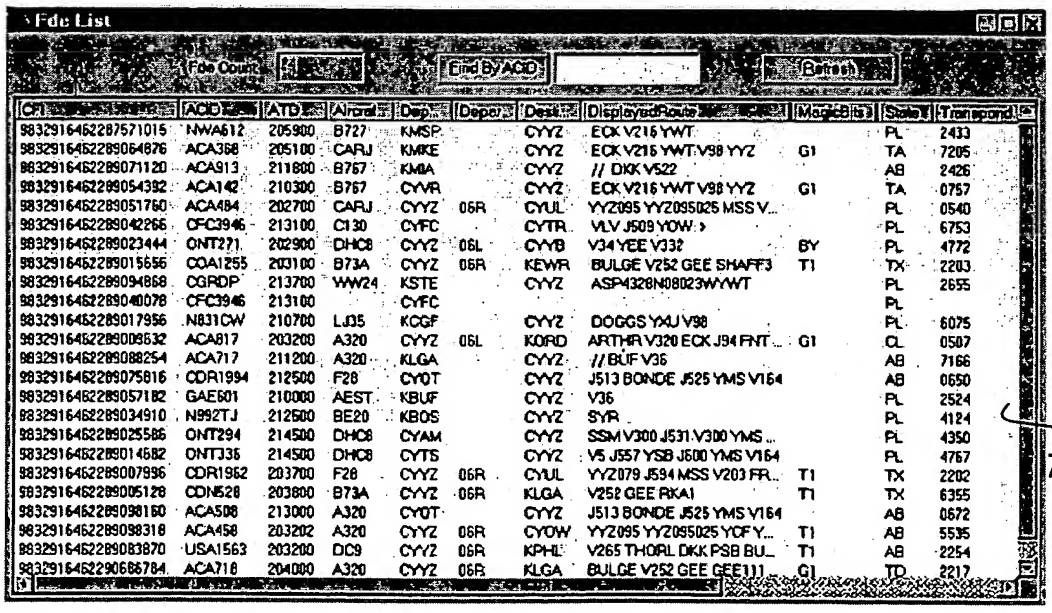

TOWER-N
TOWER-1
TOWER WS1
2658
90
TOWER WS2
1643
92
Tower Slave DM
2088
2000
Twr XIO
2092
1045
2103
54'
30
60
Primary Data Manager
1261
2000
EXCDS_SQL
139
Alternate Data Manager
1032
2000
56
XIO
1485
1489
54
55
64
ACC WS01
1586
1592
64'
ACC WS02
1669
1674
ACC
10

Fig. 6


Fde List
Fde Count
Find By ACID
Refresh
Ctl
ACID
ATD
Aircraft
Dep
Depar
Dest
DisplayedRoute
MergeBits
State
Transpond
983291646228757101 5 NWA612 205900 B727 KMSP CYYZ ECK V216 YWT PL 2433
983291646228906467 6 ACA366 205100 CARJ KMKE CYYZ ECK V216 YWT V98 YYZ G1 TA 7205
983291646228907112 0 ACA913 211800 B767 KMIA CYYZ // DKK V522 AB 2426
983291646228905439 2 ACA142 210300 B767 CYVR CYYZ ECK V216 YWT V98 YYZ G1 TA 0757
983291646228905176 0 ACA484 202700 CARJ CYYZ 06R CYUL YYZ095 YYZ095025 MSS V... PL 0540
983291646228904226 6 CFC3946 213100 C130 CYFC CYTR VLV J509 YOW ... PL 6753
983291646228902344 4 ONT271 202900 DHC8 CYYZ 06L CYYB V34 YEE V332 BY PL 4772
983291646228901565 6 COA1255 203100 B73A CYYZ 06R KEWR BULGE V252 GEE SHAFF3 T1 TX 2203
983291646228909486 8 CGRDP 213700 WW24 KSTE CYYZ ASP4328N08023WYWT PL 2655
983291646228904007 8 CFC3946 213100 CYFC PL
983291646228901795 6 N831CW 210700 LJ35 KCGF CYYZ DOGGS YXU V98 PL 6075
983291646228900853 2 ACA817 203200 A320 CYYZ 06L KORD ARTHR V320 ECK J94 FNT ... G1 CL 0507
983291646228908825 4 ACA717 211200 A320 KLGA CYYZ // BUF V36 AB 7166
983291646228907581 6 CDR1994 212500 F28 CYOT CYYZ J513 BONDE J525 YMS V164 AB 0650
983291646228905718 2 GAE601 210000 AEST KBUF CYYZ V36 PL 2524
983291646228903491 0 N992TJ 212500 BE20 KBOS CYYZ SYR PL 4124
983291646228902558 6 ONT294 214500 DHC8 CYAM CYYZ SSM V300 J531 V300 YMS ... PL 4350
983291646228901468 2 ONTJ36 214500 DHC8 CYTS CYYZ V5 J557 YSB J600 YMS V164 PL 4767
983291646228900799 6 CDR1952 203700 F28 CYYZ 06R CYUL YYZ079 J594 MSS V203 FR... T1 TX 2202
983291646228900512 8 CDN528 203800 B73A CYYZ 06R KLGA V252 GEE RKA1 T1 TX 6355
983291646228909816 0 ACA506 213000 A320 CYOT CYYZ J513 BONDE J525 YMS V164 AB 0672
983291646228909831 8 ACA458 203202 A320 CYYZ 06R CYOW YYZ095 YYZ095025 YOF Y... T1 AB 5535
983291646228908387 0 USA1563 203200 DC9 CYYZ 06R KPHL V265 THORL DKK PSB BU... T1 AB 2254
983291646229066678 4 ACA716 204000 A320 CYYZ 06R KLGA BULGE V252 GEE GEE111 G1 TD 2217

72

Fig. 7

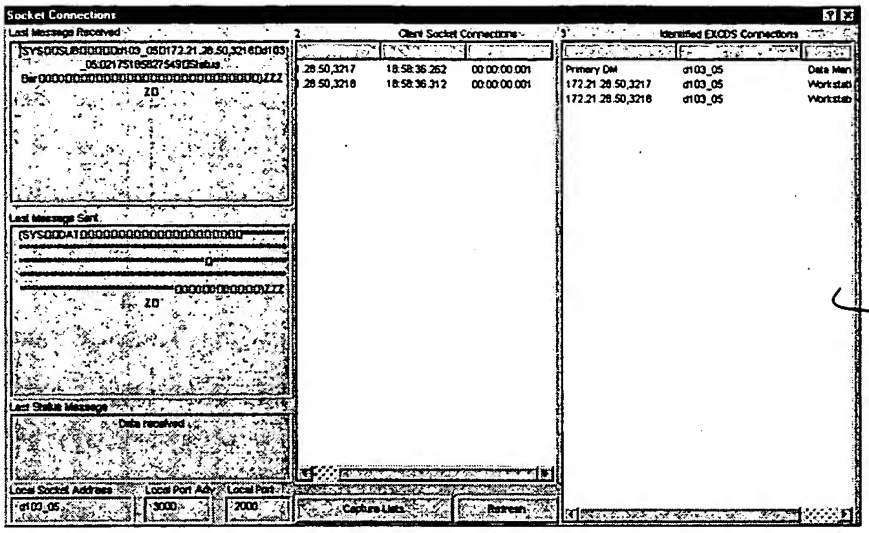

Socket Connections
Last Message Received
Client Socket Connections
Identified EXCDS Connections
Last Message Sent
Last Status Message
Data received
Local Socket Address
Local Port Adv
Local Port
3000
2000
Capture Lists
Refresh
74

Fig. 8

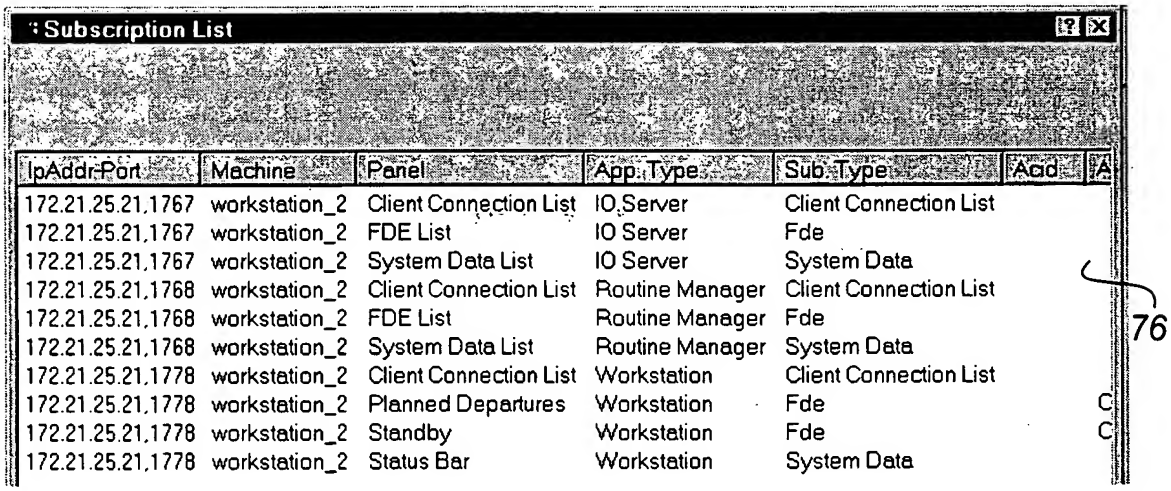

Subscription List
IpAddr:Port
Machine
Panel
App Type
Sub Type
Acid
172.21.25.21,1767 workstation_2 Client Connection List IO Server Client Connection List
172.21.25.21,1767 workstation_2 FDE List IO Server Fde
172.21.25.21,1767 workstation_2 System Data List IO Server System Data
172.21.25.21,1768 workstation_2 Client Connection List Routine Manager Client Connection List
172.21.25.21,1768 workstation_2 FDE List Routine Manager Fde
172.21.25.21,1768 workstation_2 System Data List Routine Manager System Data
172.21.25.21,1778 workstation_2 Client Connection List Workstation Client Connection List
172.21.25.21,1778 workstation_2 Planned Departures Workstation Fde
172.21.25.21,1778 workstation_2 Standby Workstation Fde
172.21.25.21,1778 workstation_2 Status Bar Workstation System Data
76

Fig. 9

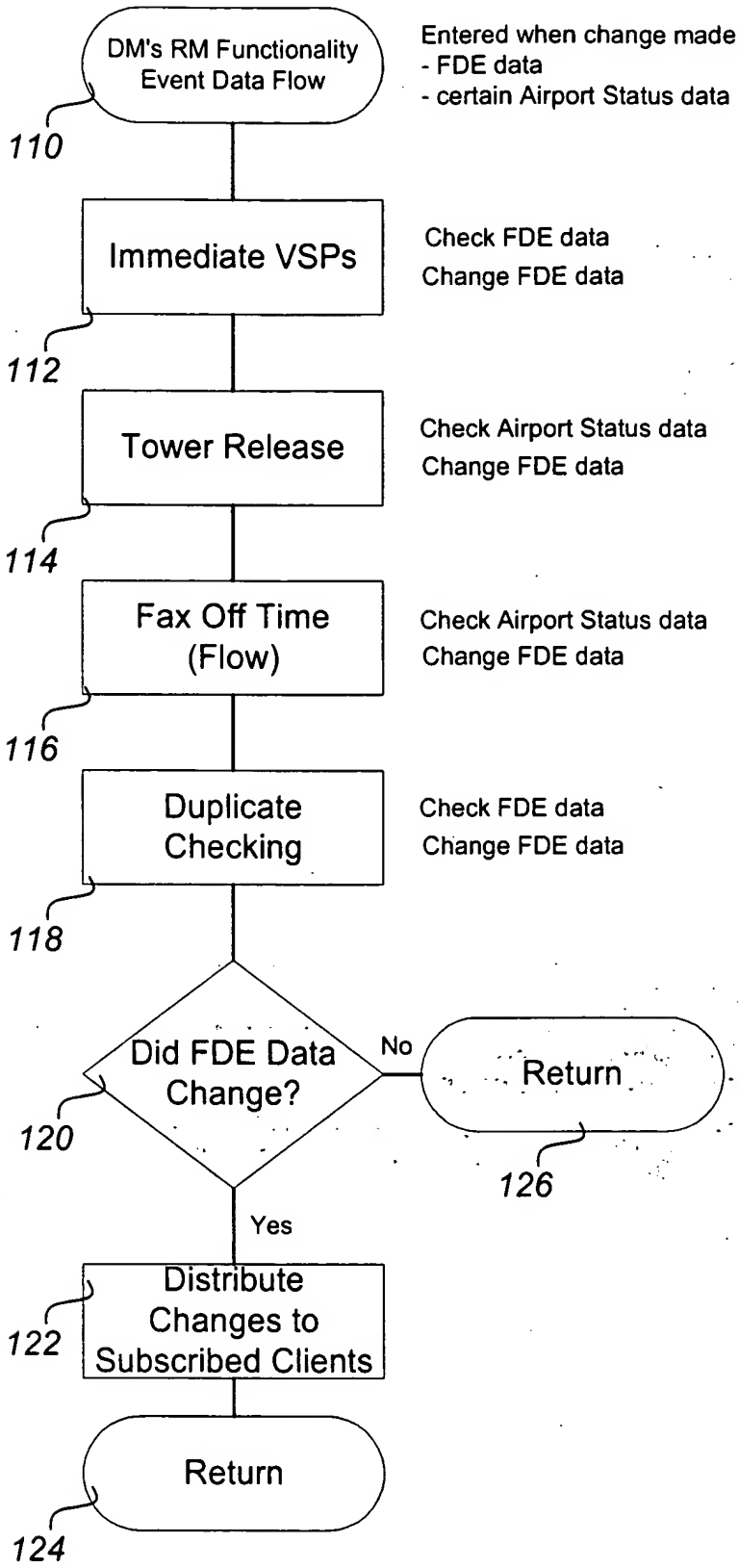

DM's RM Functionality Event Data Flow
110
Entered when change made to:
- FDE data
- certain Airport Status data
Immediate VSPs
112
Check FDE data
Change FDE data
Tower Release
114
Check Airport Status data
Change FDE data
Fax Off Time (Flow)
116
Check Airport Status data
Change FDE data
Duplicate Checking
118
Check FDE data
Change FDE data
Did FDE Data Change?
120
No
Return
126
Yes
Distribute Changes to Subscribed Clients
122
Return
124

Fig. 11

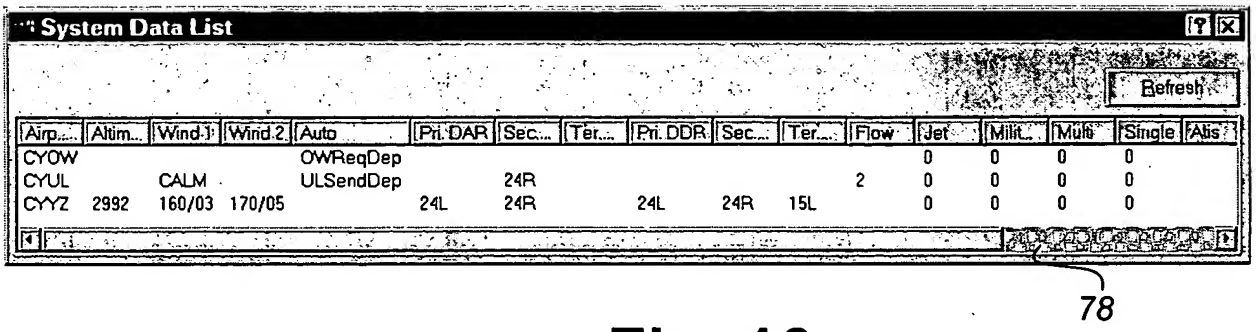

System Data List
Refresh
Airp... Altim... Wind 1 Wind 2 Auto Pri. DAR Sec... Ter... Pri. DDR Sec... Ter... Flow Jet Milit... Multi Single Alias
CYOW OWReqDep 0 0 0 0
CYUL CALM ULSendDep 24R 2 0 0 0 0
CYYZ 2992 160/03 170/05 24L 24R 24L 24R 15L 0 0 0 0
78

Fig. 10

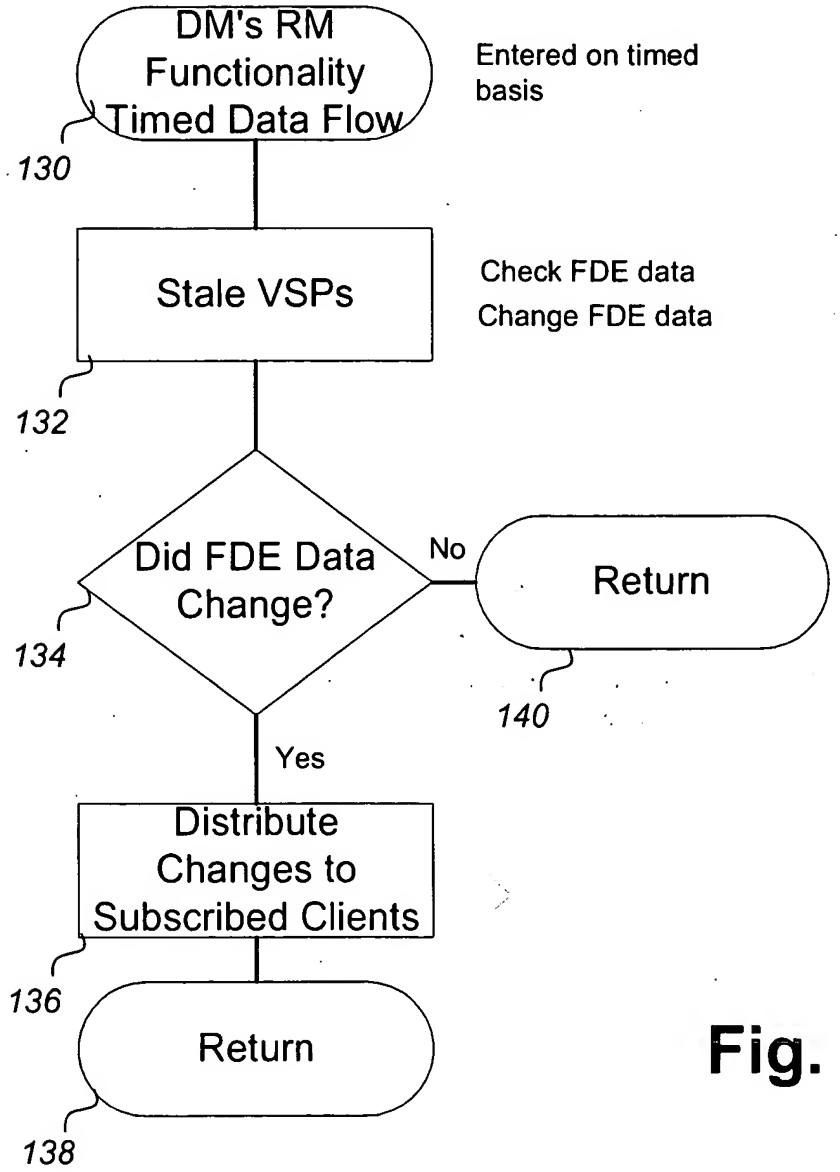

DM's RM Functionality Timed Data Flow
130
Entered on timed basis
Stale VSPs
132
Check FDE data
Change FDE data
Did FDE Data Change?
134
No
Return
140
Yes
Distribute Changes to Subscribed Clients
136
Return
138

Fig. 12

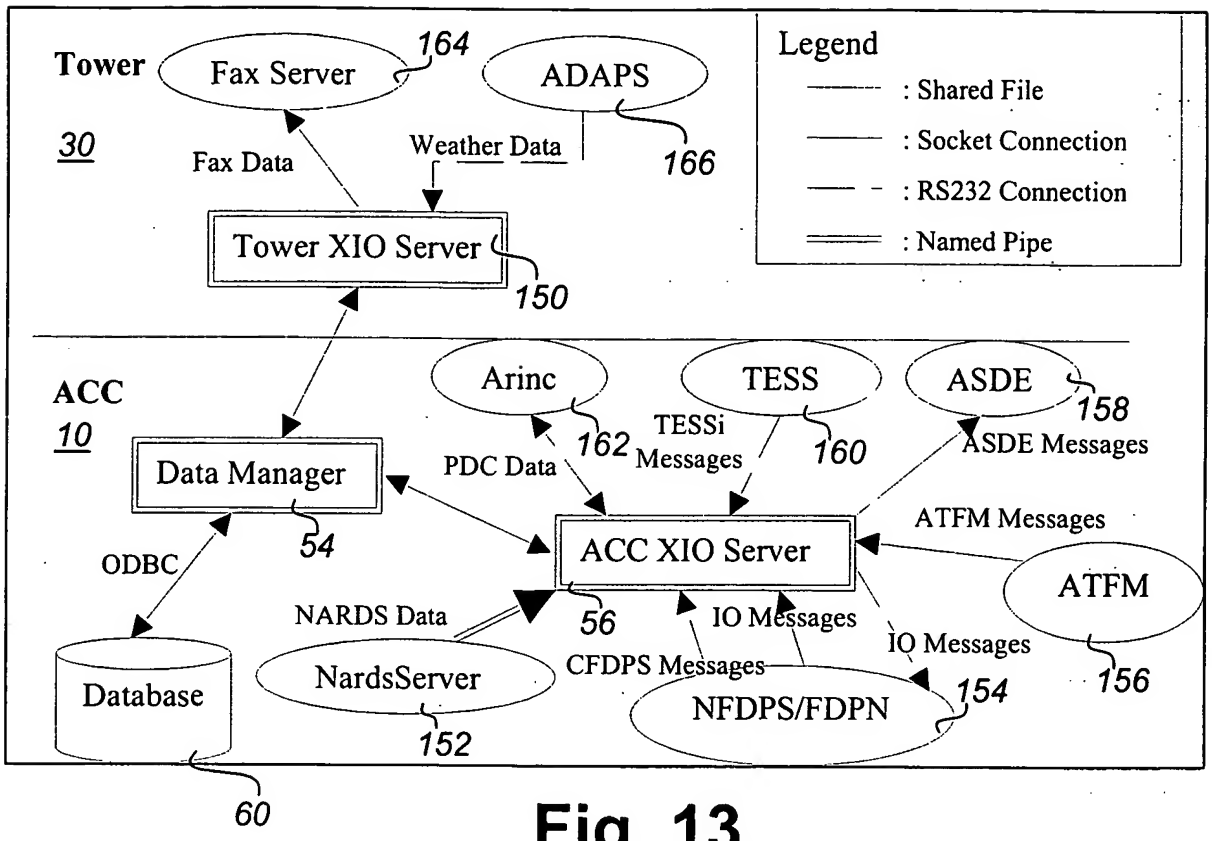

Tower
30
Fax Server
164
ADAPS
166
Fax Data
Weather Data
Tower XIO Server
150
Legend
: Shared File
: Socket Connection
: RS232 Connection
: Named Pipe
ACC
10
Arinc
162
TESS
160
ASDE
158
TESSi Messages
ASDE Messages
PDC Data
Data Manager
54
ATFM Messages
ACC XIO Server
ODBC
ATFM
NARDS Data
56
IO Messages
IO Messages
CFDPS Messages
Database
NardsServer
152
NFDPS/FDPN
154
156
60

Fig. 13

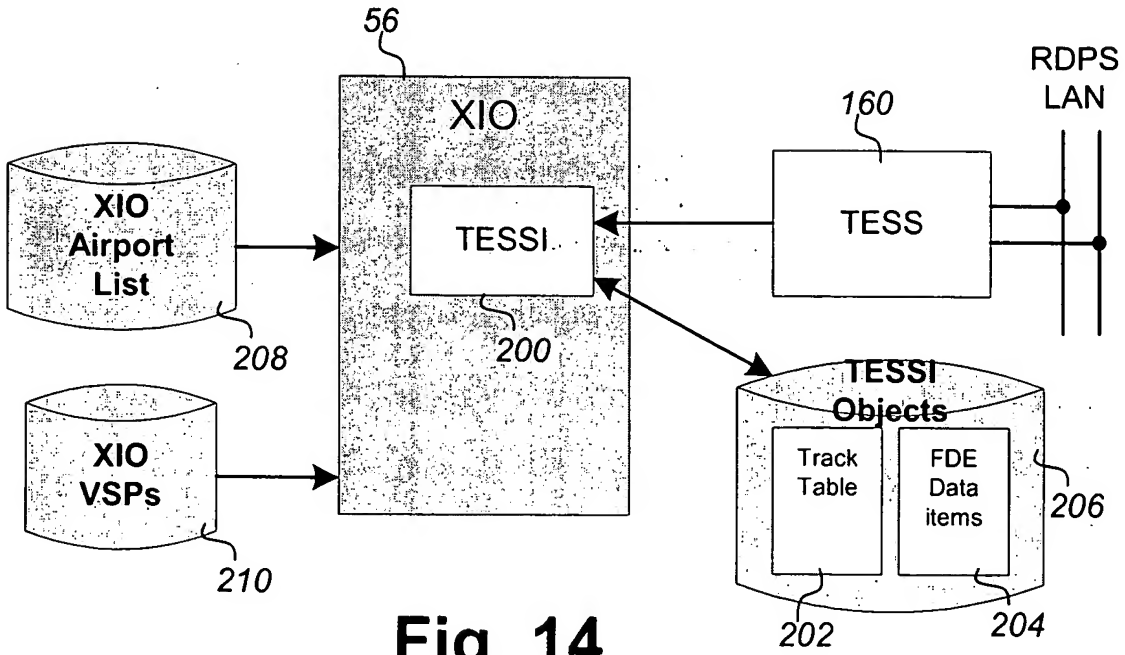

56
XIO
RDPS LAN
160
XIO Airport List
TESSI
TESS
208
200
TESSI Objects
XIO VSPs
Track Table
FDE Data items
206
210
202
204

Fig. 14

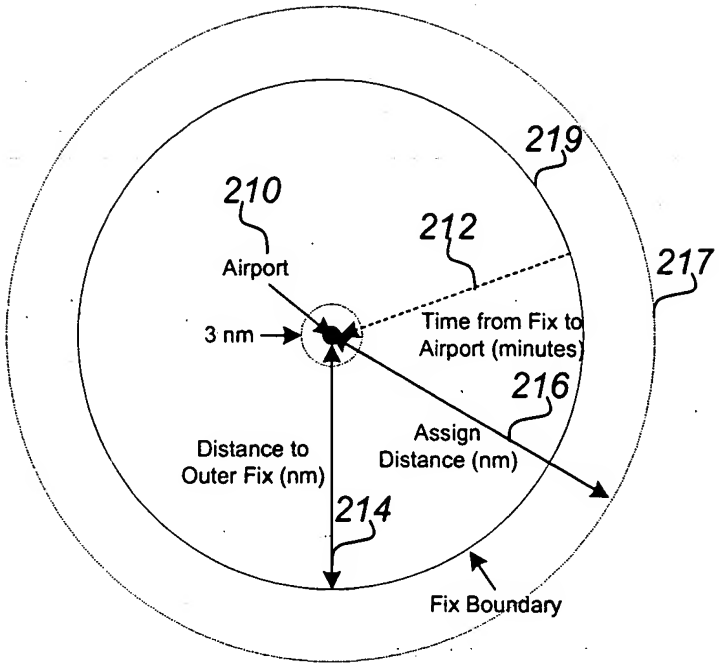

219
210
212
217
Airport
3 nm
Time from Fix to Airport (minutes)
216
Assign Distance (nm)
Distance to Outer Fix (nm)
214
Fix Boundary

Fig. 15

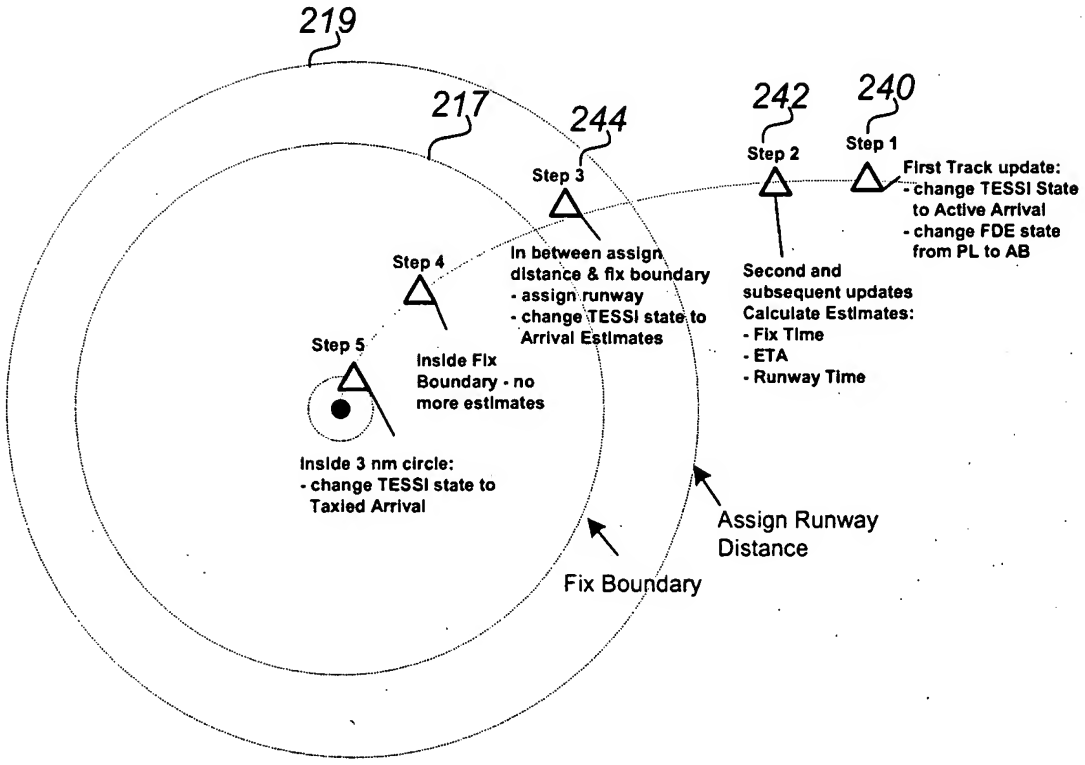

219
217
244
242
240
Step 1
Step 2
Step 3
Step 4
Step 5
First Track update:
- change TESSI State to Active Arrival
- change FDE state from PL to AB
In between assign distance & fix boundary
- assign runway
- change TESSI state to Arrival Estimates
Second and subsequent updates Calculate Estimates:
- Fix Time
- ETA
- Runway Time
Inside Fix Boundary - no more estimates
Inside 3 nm circle:
- change TESSI state to Taxied Arrival
Assign Runway Distance
Fix Boundary

Fig. 17

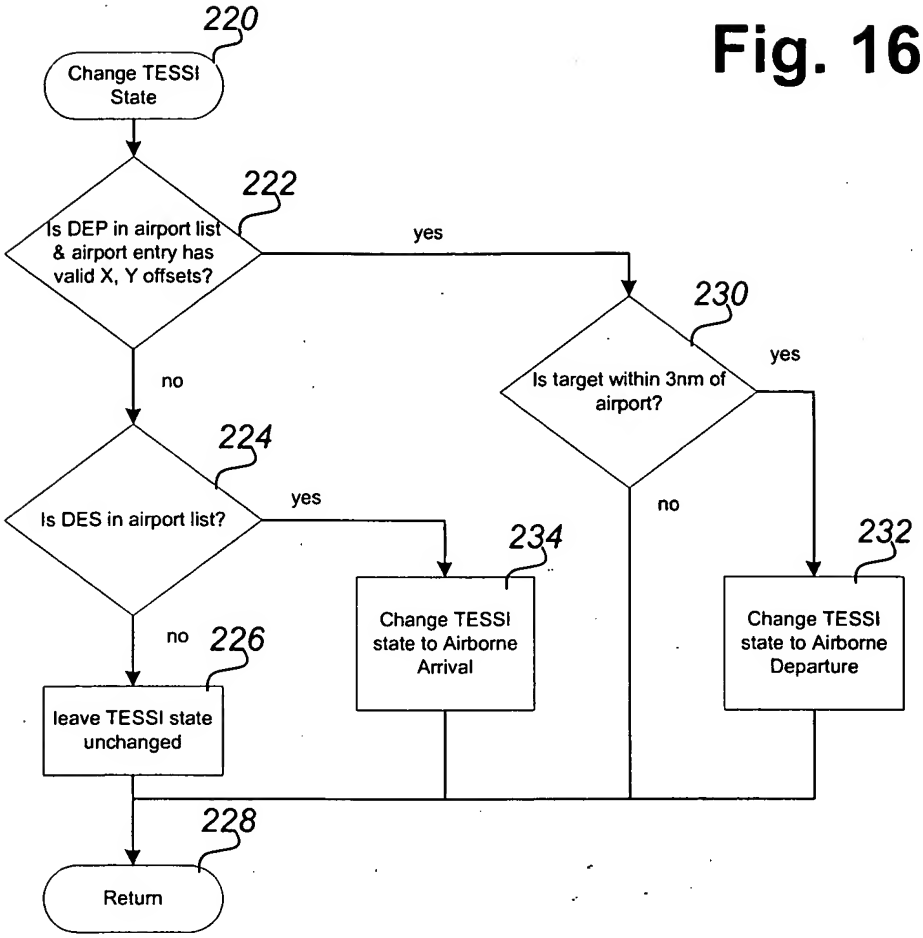

220
Change TESSI State
222
Is DEP in airport list & airport entry has valid X, Y offsets?
yes
no
230
Is target within 3nm of airport?
yes
no
224
Is DES in airport list?
yes
no
234
Change TESSI state to Airborne Arrival
232
Change TESSI state to Airborne Departure
226
leave TESSI state unchanged
228
Return

Fig. 16

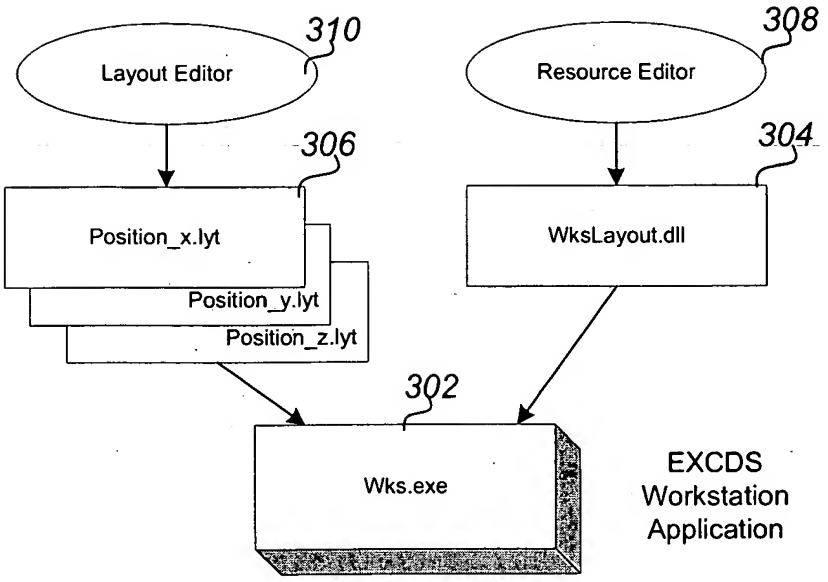

310
Layout Editor
308
Resource Editor
306
304
Position_x.lyt
Position_y.lyt
Position_z.lyt
WksLayout.dll
302
Wks.exe
EXCDS
Workstation
Application

Fig. 18

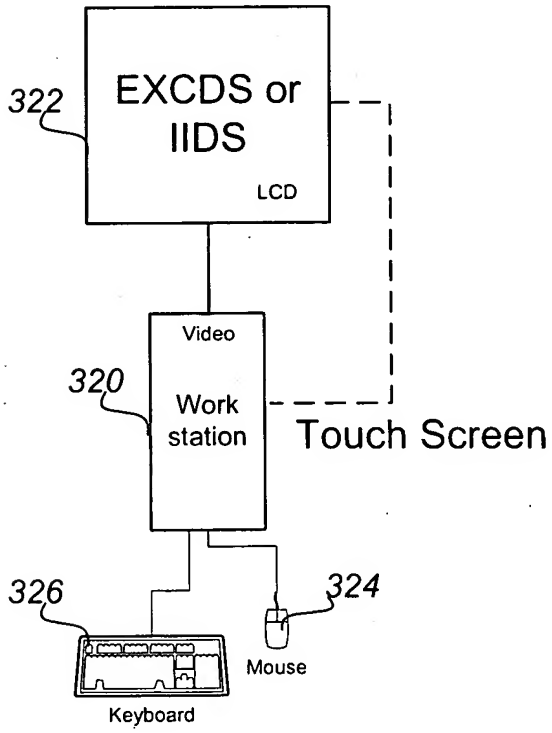
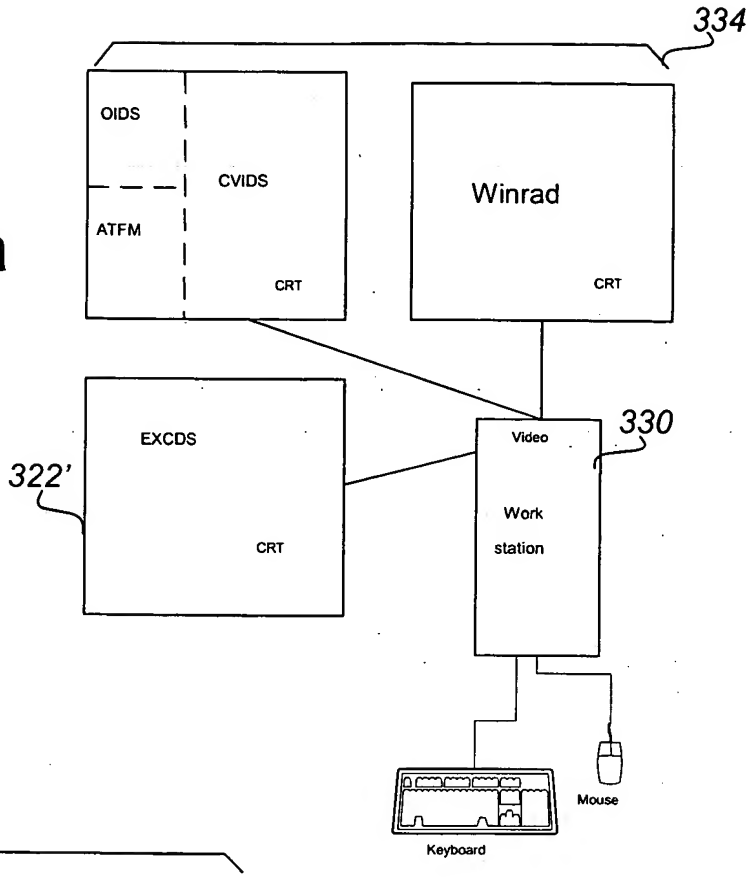

322
EXCDS or
IIDS
LCD
Video
320
Work
station
Touch Screen
326
324
Mouse
Keyboard
Tower Position

Fig. 19

Fig. 20a



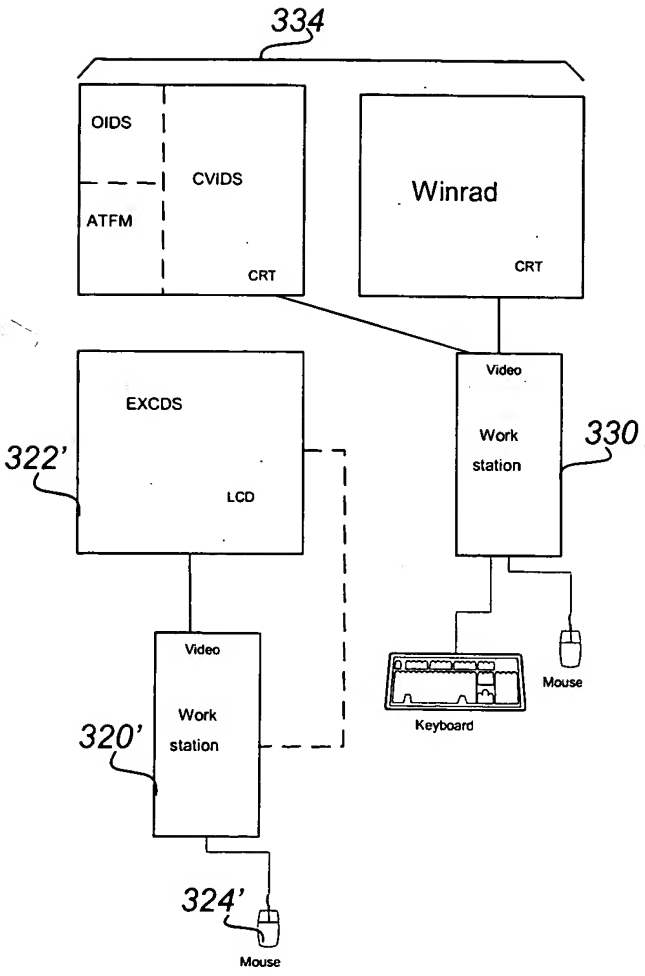


Fig. 20b

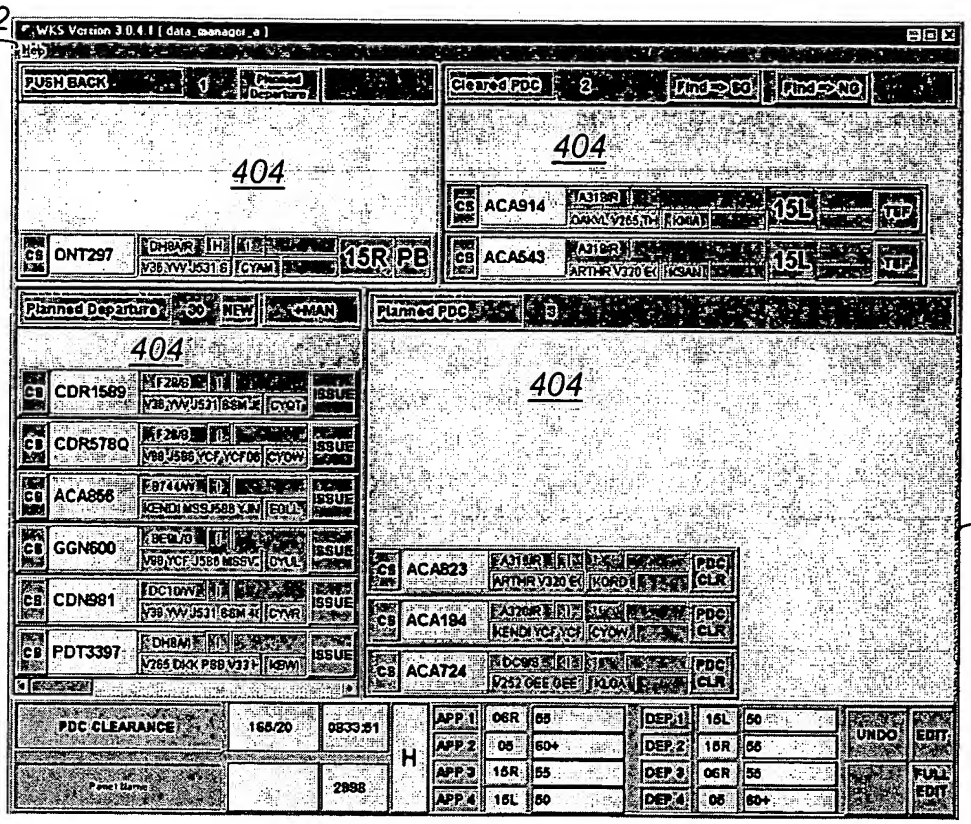


Fig. 21

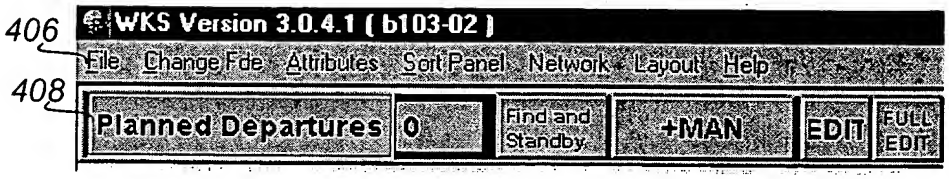


Fig. 22

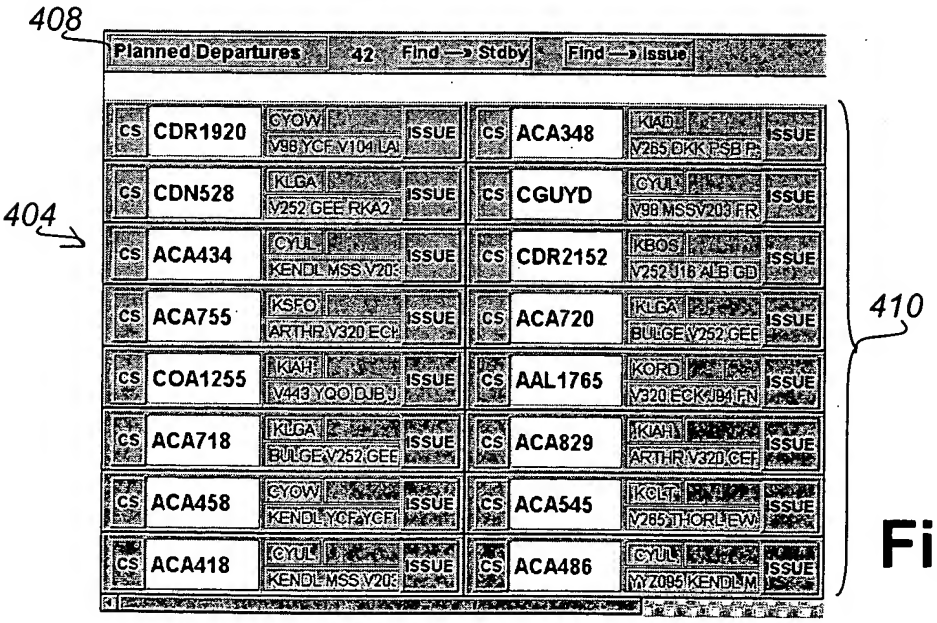


Fig. 23

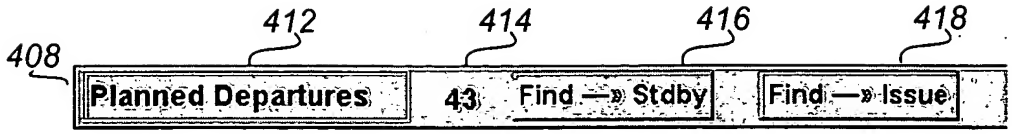
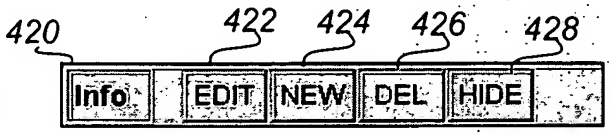


Fig. 24

Fig. 25



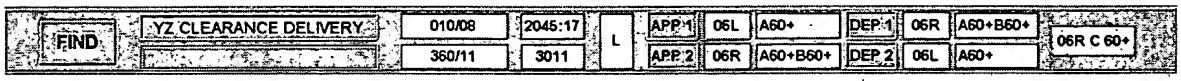


Fig. 26

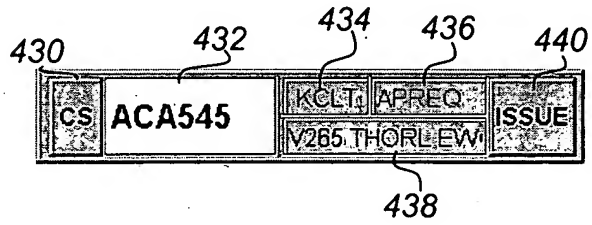


Fig. 27

Fig. 28

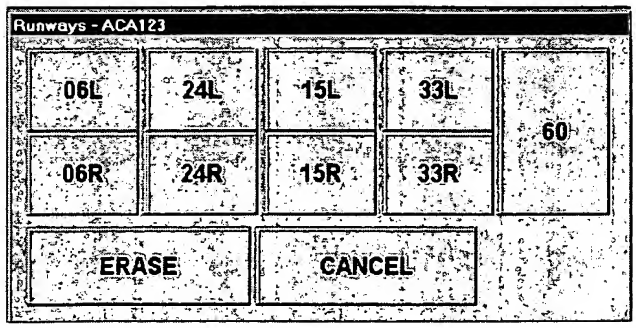


Fig. 29

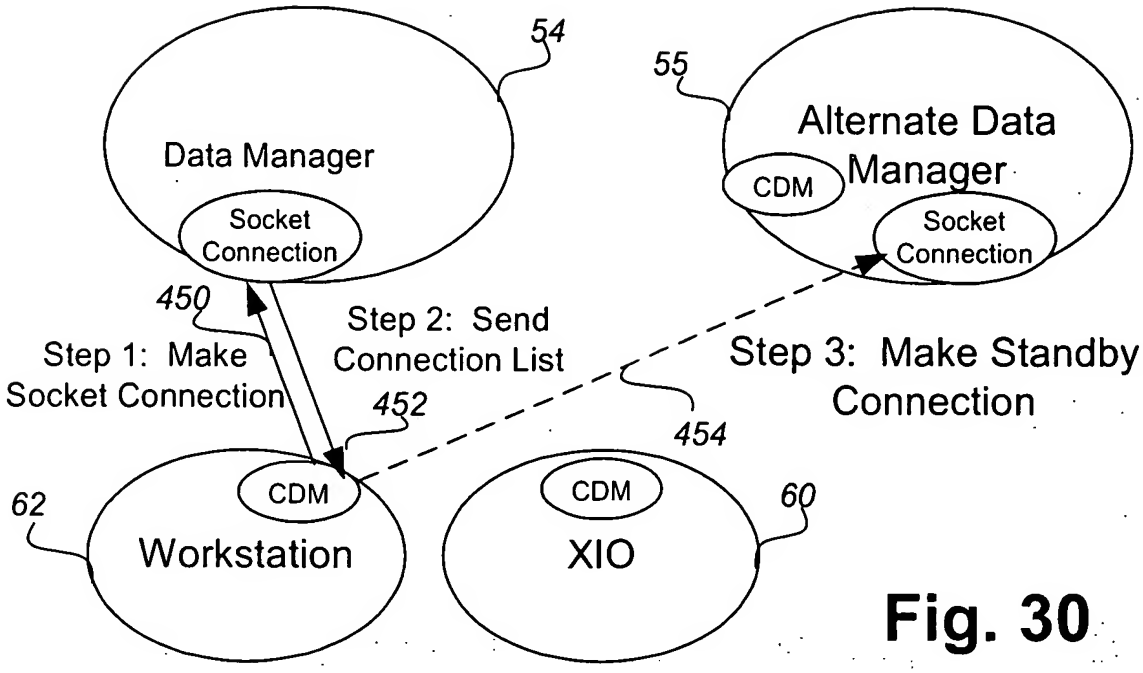

54
Data Manager
Socket Connection
55
Alternate Data Manager
CDM
Socket Connection
450
Step 1: Make Socket Connection
Step 2: Send Connection List
452
454
Step 3: Make Standby Connection
62
CDM
Workstation
CDM
XIO
60

Fig. 30

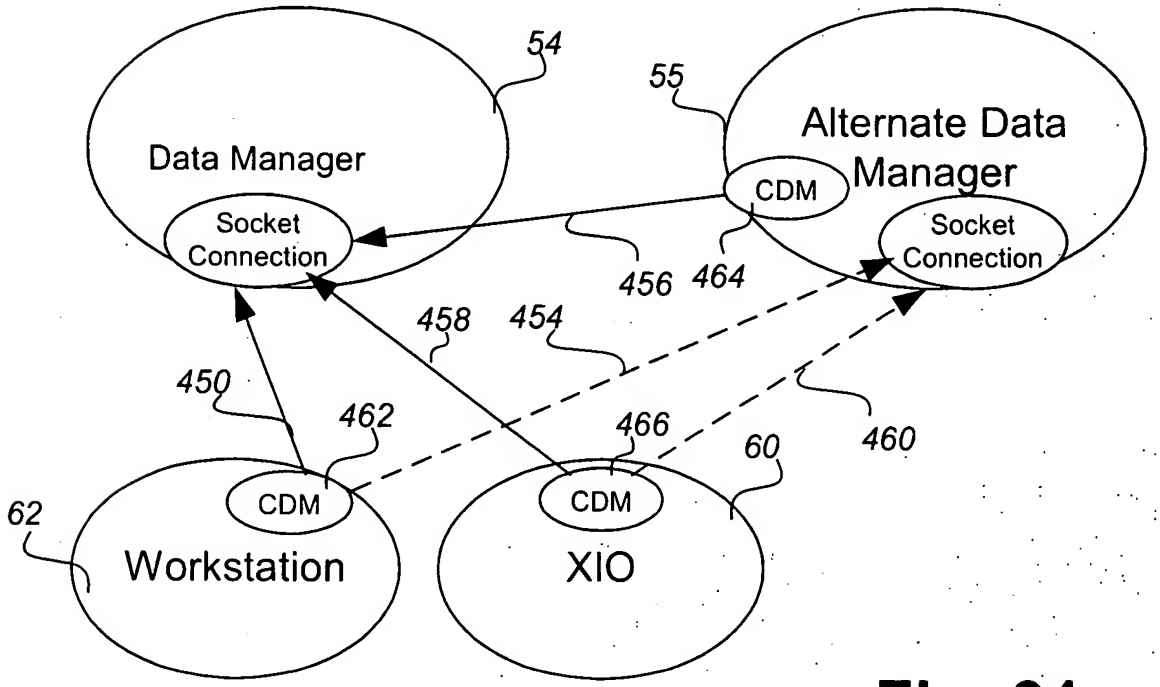

54
Data Manager
Socket Connection
55
Alternate Data Manager
CDM
Socket Connection
456
464
458
454
450
462
466
460
60
62
CDM
Workstation
CDM
XIO

Fig. 31

Fig. 32

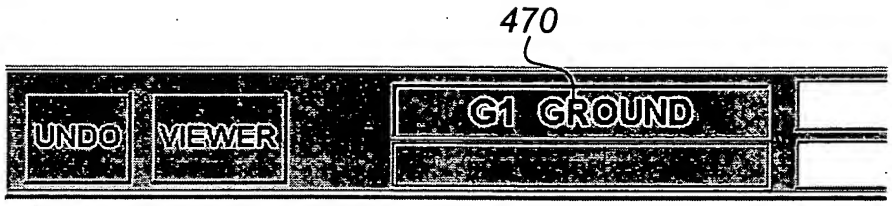


Fig. 33

Red	not connected
Yellow	established socket connection
Blue	receipt of connection list
Green	receipt of complete subscription

Fig. 34

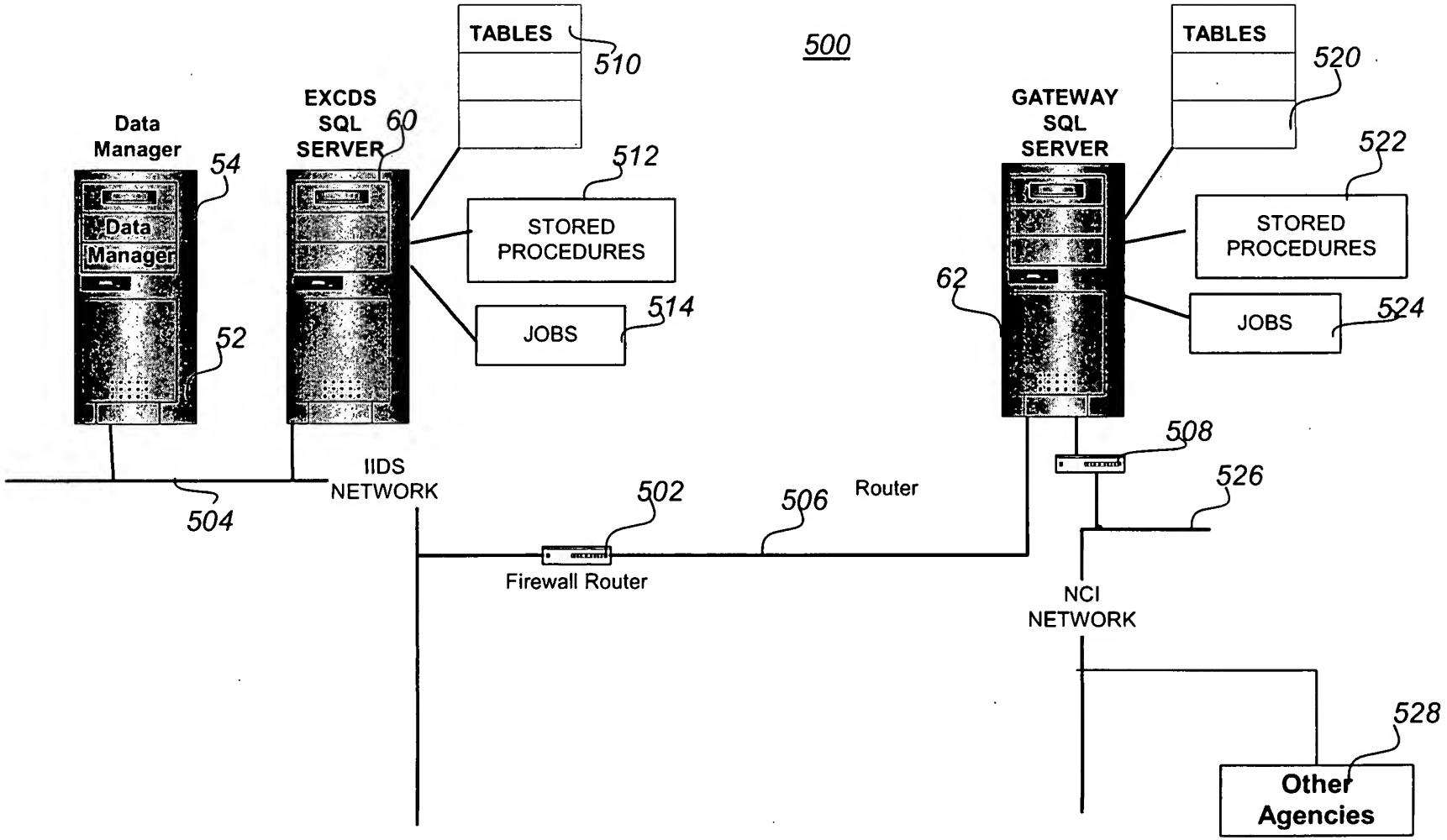

500
TABLES
510
EXCDS
SQL
SERVER
60
Data
Manager
54
Data
Manager
52
512
STORED
PROCEDURES
JOBS
514
IIDS
NETWORK
504
502
Firewall Router
506
Router
TABLES
520
GATEWAY
SQL
SERVER
62
522
STORED
PROCEDURES
JOBS
524
508
526
NCI
NETWORK
528
Other
Agencies

Fig. 35

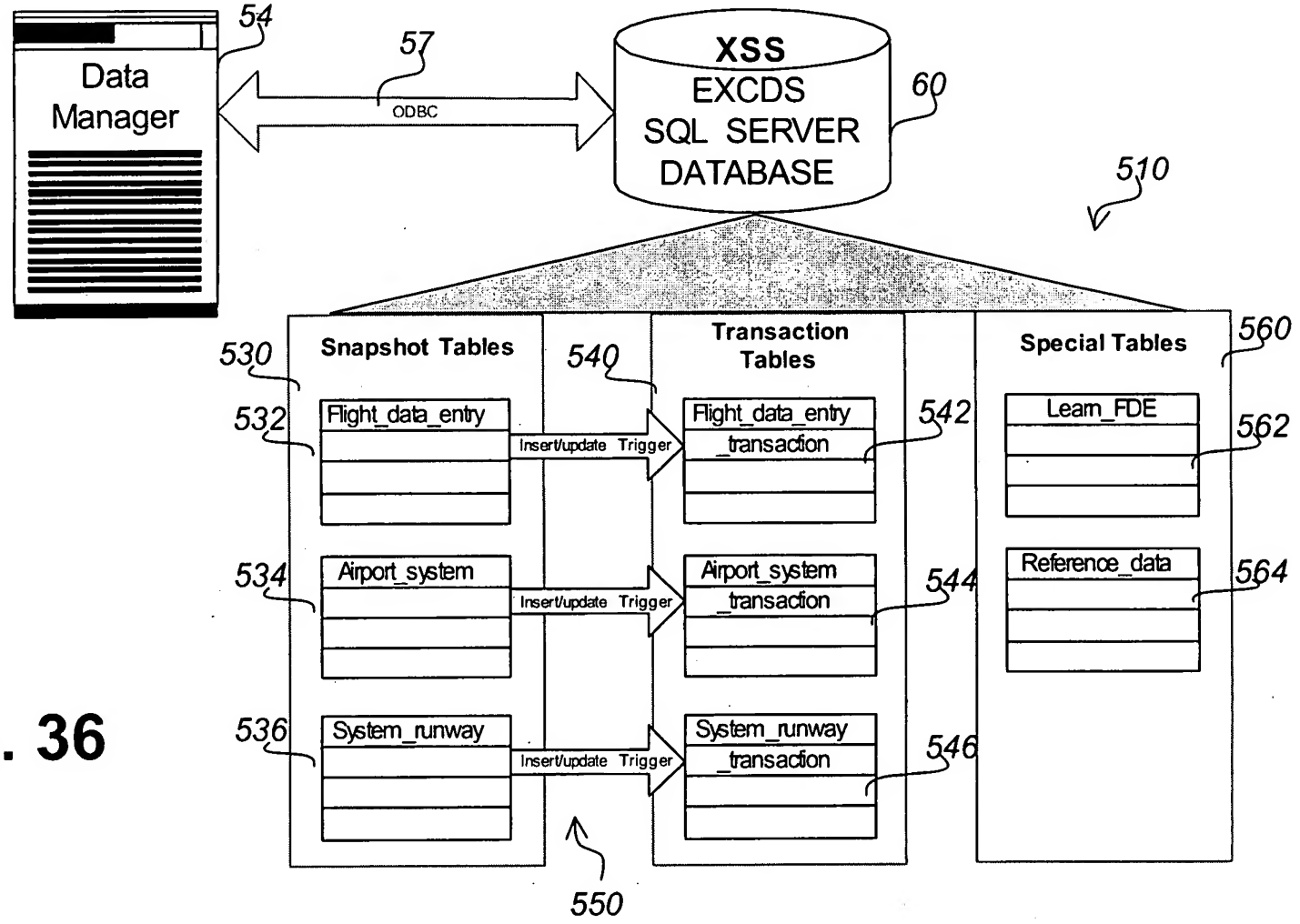

Data Manager
54
57
ODBC
XSS
EXCDS
SQL SERVER
DATABASE
60
510
530
Snapshot Tables
540
Transaction Tables
560
Special Tables
532
Flight_data_entry
Insert/update Trigger
Flight_data_entry
_transaction
542
Learn_FDE
562
534
Airport_system
Insert/update Trigger
Airport_system
_transaction
544
Reference_data
564
536
System_runway
Insert/update Trigger
System_runway
_transaction
546
550

Fig. 36

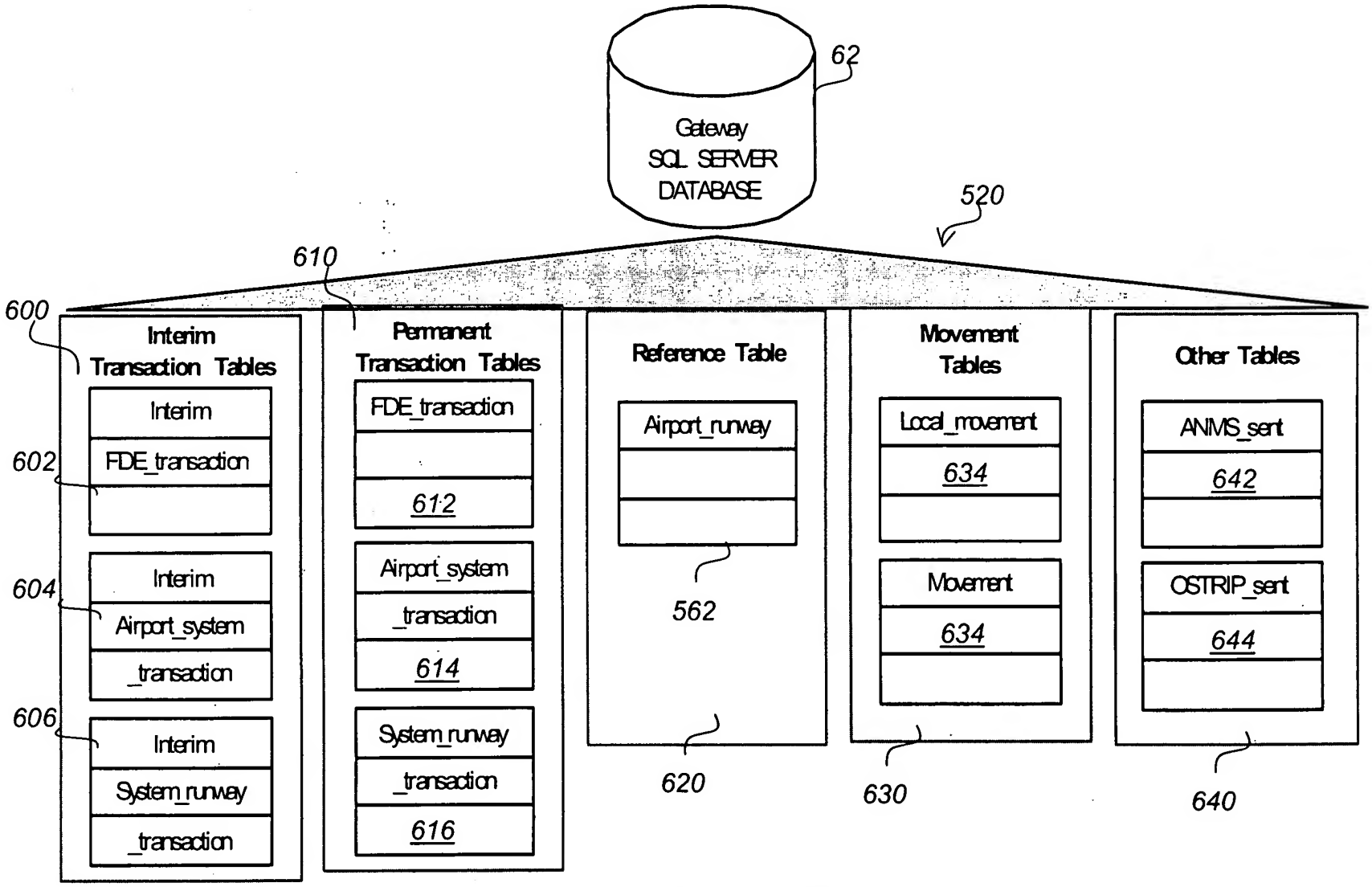

62
Gateway
SQL SERVER
DATABASE
520
610
600
Interim
Transaction Tables
Interim
FDE_transaction
602
Interim
Airport_system
_transaction
604
Interim
System_runway
_transaction
606
Permanent
Transaction Tables
FDE_transaction
612
Airport_system
_transaction
614
System_runway
_transaction
616
Reference Table
Airport_runway
562
620
Movement
Tables
Local_movement
634
Movement
634
630
Other Tables
ANMS_sent
642
OSTRIP_sent
644
640

Fig. 37

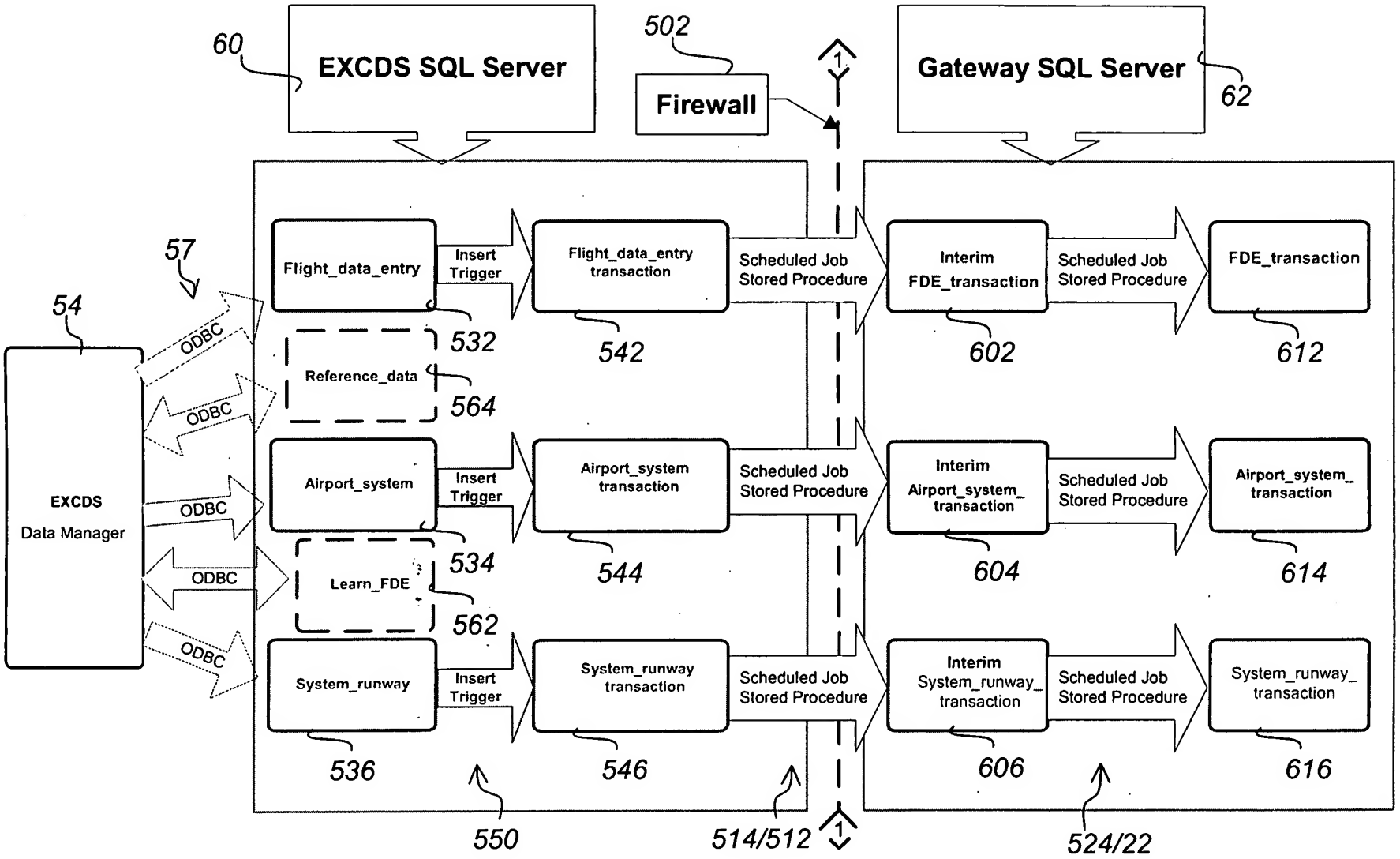

60
EXCDS SQL Server
502
Firewall
Gateway SQL Server
62
57
54
EXCDS
Data Manager
ODBC
ODBC
ODBC
ODBC
ODBC
Flight_data_entry
Insert Trigger
532
Flight_data_entry transaction
542
Scheduled Job Stored Procedure
Interim FDE_transaction
602
Scheduled Job Stored Procedure
FDE_transaction
612
Reference_data
564
Airport_system
Insert Trigger
534
Airport_system transaction
544
Scheduled Job Stored Procedure
Interim Airport_system_ transaction
604
Scheduled Job Stored Procedure
Airport_system_ transaction
614
Learn_FDE
562
System_runway
Insert Trigger
536
System_runway transaction
546
Scheduled Job Stored Procedure
Interim System_runway_ transaction
606
Scheduled Job Stored Procedure
System_runway_ transaction
616
550
514/512
524/22

Fig. 38